

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	2.910	4.468	4.406	0.000	4.406	16.376	12.360	7.093	6.442	Continuing	Continuing
654236: <i>Engineering Analysis</i>	-	2.910	2.979	2.421	0.000	2.421	4.466	5.410	5.107	4.420	Continuing	Continuing
655708: <i>Nuclear Weapons Support</i>	-	0.000	1.489	1.985	0.000	1.985	11.910	6.950	1.986	2.022	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Air Force Nuclear Weapons Center, Kirtland AFB, NM, is the primary executing agency for this program. The Air Force is tasked with maintaining and providing technical expertise on all AF nuclear weapons and weapon systems and with developing and maintaining counter-chemical, biological, radiological, and nuclear (C-CBRN) capabilities. This program provides resources for technical and programmatic activities which includes performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; safety, security, and reliability; Air Force legacy nuclear stockpile management/retirement; nuclear certification and nuclear certification management.

This program element includes necessary civilian pay expenses required to manage, execute, and deliver Nuclear Weapon Support weapon system capability. The use of such program funds is in addition to the civilian pay expenses budgeted in program elements 0605831F - Capability Integration and 0605833F - Nuclear Systems.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force	Date: February 2019
--	----------------------------

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	3.009	4.468	5.957	0.000	5.957
Current President's Budget	2.910	4.468	4.406	0.000	4.406
Total Adjustments	-0.099	0.000	-1.551	0.000	-1.551
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.099	0.000			
• Other Adjustments	0.000	0.000	-1.551	0.000	-1.551

Change Summary Explanation

FY19 SBIR \$99K.

FY20 \$1.55M adjustment due to higher AF priorities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support				Project (Number/Name) 654236 / Engineering Analysis			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
654236: <i>Engineering Analysis</i>	-	2.910	2.979	2.421	0.000	2.421	4.466	5.410	5.107	4.420	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Air Force Nuclear Weapons Center is the executing agency for this program. The Air Force is tasked with maintaining and providing technical expertise on all AF nuclear weapons and weapon systems and conducting mission-level cyber risk analysis, integrating cybersecurity into systems engineering, enhancing adaptability and agility via modular design and approaches, developing a cyber-savvy workforce, increasing assurance in fielded systems in a cost effective and efficient manner, increasing the integration of cyber intelligence and enabling cyber operation flights and cyber protection teams. This program provides resources for technical and programmatic activities which includes performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; training; safety, security, and reliability; Air Force legacy nuclear stockpile management/retirement; nuclear certification and nuclear certification management. The AFNWC will partner with external agencies to achieve cross cutting solutions to mitigate cyber vulnerabilities. The development of Model Based System Engineering will facilitate the testing and analysis of nuclear weapons systems.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Engineering Analysis	2.910	2.979	2.421	0.000	2.421
Description: Provide the technical oversight of all Air Force (AF) nuclear weapons, delivery systems, and support systems. Provide the engineering and technical management expertise required in critical areas of nuclear weapons safety, security, reliability, operations, modernization, testing, certification, and counter proliferation.					
FY 2019 Plans: Continue to analyze and document nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment.					
FY 2020 Base Plans: Continue to analyze and document nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment.					
FY 2020 OCO Plans: None					
FY 2019 to FY 2020 Increase/Decrease Statement:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 654236 / <i>Engineering Analysis</i>
--	--	--

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Funding decreased due to de-scoped cyber engineering analysis work from FY19 to FY20.					
Accomplishments/Planned Programs Subtotals	2.910	2.979	2.421	0.000	2.421

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020 Base</u>	<u>FY 2020 OCO</u>	<u>FY 2020 Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 64222F/674237: <i>EMP Certification</i>	26.672	-	-	-	-	-	-	-	-	0.000	26.672
• RDTE 05 64222F/655708: <i>Nuclear Weapons Support</i>	0.000	1.489	1.985	0.000	1.985	11.910	6.950	1.986	2.022	Continuing	Continuing

Remarks

D. Acquisition Strategy

Cost Plus Award Fee (CPAF) and Military Interdepartmental Purchase Request (MIPR) will be used to obtain technical analyses and technical support for safety, operations, and counter proliferation assessments. Supporting activities are contracted separately using contract strategies deemed most appropriate to the effort. All contracts will be openly competed.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support	Project (Number/Name) 654236 / Engineering Analysis
--	---	---

Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC Cybersecurity Vulnerability Analysis	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.790	Sep 2018	-		0.395	Oct 2019	-		0.395	Continuing	Continuing	-
FFRDC Emulation of the Strategic Missile Integration Complex (SMIC)	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.757	Sep 2018	0.790	Mar 2019	0.790	Oct 2019	-		0.790	Continuing	Continuing	-
Subtotal			-	1.547		0.790		1.185		-		1.185	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Secure Cyber Facility Support	MIPR	Various : Kirtland AFB, NM	-	0.115	Nov 2018	0.500	Oct 2018	-		-		-	0.000	0.615	-
Cyber Support	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.500	Apr 2019	-		-		-		-	0.000	0.500	-
Science Advisory Board (SAB)	MIPR	TBD : Kirtland AFB, NM	-	-		0.379	Oct 2018	0.150	Oct 2019	-		0.150	Continuing	Continuing	-
Model Based Systems Engineering (MBSE)	Reqn	Not specified. : Kirtland AFB, NM	-	-		0.266	Oct 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.615		1.145		0.150		-		0.150	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Institute for Complex Additive Systems Analysis (ICASA)	MIPR	TBD : Socorro, NM	-	-		0.104	Mar 2019	0.286	Oct 2019	-		0.286	Continuing	Continuing	-
Subtotal			-	-		0.104		0.286		-		0.286	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 654236 / <i>Engineering Analysis</i>
--	--	--

Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EZ A&AS	Various	Various : Kirtland AFB, NM	-	0.040	Oct 2018	0.795	Oct 2018	0.350	Dec 2019	-		0.350	Continuing	Continuing	-
Program Management Support (PMA)	Various	Various : Kirtland AFB, NM	-	0.708	Aug 2018	0.145	Oct 2018	0.450	Dec 2019	-		0.450	Continuing	Continuing	-
Subtotal			-	0.748		0.940		0.800		-		0.800	Continuing	Continuing	N/A

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.910	2.979	2.421	-	2.421	Continuing	Continuing	N/A

Remarks
 FY19 to FY20 changes -- realigned some line items to the appropriate categories and combined like items.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 654236 / <i>Engineering Analysis</i>
--	--	--

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
Engineering & Cyber Security Analysis																												
Cyber Security Vulnerability Assessments & Analysis																												
Emulation of the SMIC																												
Secure Cyber Facility Support																												
Science Advisory Board																												
MBSE																												
ICASA - Test & Evaluation																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 654236 / <i>Engineering Analysis</i>
--	--	--

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Engineering & Cyber Security Analysis</i>				
Cyber Security Vulnerability Assessments & Analysis	4	2018	4	2024
Emulation of the SMIC	4	2018	4	2024
Secure Cyber Facility Support	1	2019	4	2019
Science Advisory Board	1	2019	4	2024
MBSE	1	2019	4	2024
ICASA - Test & Evaluation	1	2020	4	2024

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support				Project (Number/Name) 655708 / Nuclear Weapons Support			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
655708: Nuclear Weapons Support	-	0.000	1.489	1.985	0.000	1.985	11.910	6.950	1.986	2.022	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

New Weapon Generation Facilities (WGF) within AFGSC are adopting a new concept of operations by integrating maintenance and storage mission sets into one facility. To support mission generation requirements, facility support equipment and capabilities must be reviewed, modified or in extreme cases, re-developed in order to maintain operational readiness. Examples of equipment under review include but not limited to MB-4 & MHU-196/204. This review and potential modification of existing equipment ensures mission generation remains executable.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Weapon Generation Facility Material Handling Systems	0.000	1.489	1.985	0.000	1.985
Description: Weapon Generation Facility Material Handling System Review					
FY 2019 Plans: This effort initiates a review of material handling system equipment to accommodate new Weapon Generation Facilities (WGF) concept of operations by integrating maintenance and storage mission sets into one facility. Analysis will determine the ability of existing equipment capability to support mission generation requirements and facility support equipment. Analysis will determine whether modification or re-development of equipment is required.					
FY 2020 Base Plans: This effort will continue the review of material handling system equipment to accommodate new Weapon Generation Facilities (WGF) concept of operations by integrating maintenance and storage mission sets into one facility. Analysis will determine the ability of existing equipment capability to support mission generation requirements and facility support equipment. Analysis will determine whether modification or re-development of equipment is required.					
FY 2020 OCO Plans: none.					
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase due to growing number of WGFs being analyzed each year.					
Accomplishments/Planned Programs Subtotals	0.000	1.489	1.985	0.000	1.985

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force	Date: February 2019
---	----------------------------

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 655708 / <i>Nuclear Weapons Support</i>
--	--	---

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 64222F/674237: <i>EMP Certification</i>	26.972	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	26.972
• RDTE 05 64222F/654236: <i>Engineering Analysis</i>	2.910	2.979	2.421	0.000	2.421	4.466	5.410	5.107	4.420	Continuing	Continuing

Remarks

D. Acquisition Strategy

The acquisition strategy focuses on determining if the existing equipment can be modified or if a re-development effort is required. Once the analysis determines which course of action is required the appropriate acquisition strategy will be defined.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 655708 / <i>Nuclear Weapons Support</i>
--	--	---

FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

WGF - Facility Support Equipment	
Market Research	
Facility Support Equipment Modification/ Development	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force **Date:** February 2019

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i>	Project (Number/Name) 655708 / <i>Nuclear Weapons Support</i>
--	--	---

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>WGF - Facility Support Equipment</i>				
Market Research	3	2019	2	2020
Facility Support Equipment Modification/Development	3	2020	4	2024